INDIANA DEPARTMENT OF TRANSPORTATION
MATERIALS AND TESTS DIVISION

Portland Cement Concrete Plant Inspection
ITM No. 405-99P

1.0 SCOPE

1.1 This procedure covers the field inspection of PCC plants. The inspection will identify the procedure for the storage and sampling of aggregates, cement, pozzolans, and admixtures. The inspection also covers scale and meter verification.

1.2 The values stated in either SI metric or acceptable English units are to be regarded separately as standard, as appropriate for a specification with which this ITM is used. Within the text, English units are shown in parenthesis. The values stated in each system may not be exact equivalents; therefore each system shall be used independently of the other, without combining values in any way.

1.3 This ITM may involve hazardous materials, operations, and equipment. This ITM does not purport to address all of the safety problems associated with its use. It is the responsibility of whoever uses this ITM to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

2.0 REFERENCES

2.1 Department Standard Specifications

3.0 TERMINOLOGY

3.1 Terms and Abbreviations. Definitions for terms and abbreviations shall be in accordance with the Department’s Standard Specifications, Section 101.

4.0 SIGNIFICANCE AND USE

4.1 This ITM is used to ensure that PCC plants are capable of producing concrete in accordance with applicable Department Standard Specifications.

5.0 APPARATUS

5.1 Certified masses (weights)
5.2 Tanks and scales

6.0 PROCEDURE

6.1 The PCC supplier shall request a Department inspection of the PCC plant in accordance with 106.03 and 507.02.

6.2 The inspection date and time will be mutually agreed upon.

6.3 The PCC supplier shall ensure that the required apparatus are on site.

6.4 The PCC plant will be inspected in accordance with APPENDIX A.

6.4.1 Record plant identification data.

6.4.2 Inspect aggregate storage.

6.4.3 Inspect aggregate conveying system.

6.4.4 Inspect storage and conveying system.

6.4.5 Review admixture control systems.

6.4.6 Check all gates to confirm non-leakage by charging material into each bin and then into the weigh hopper.

6.4.7 Locate the cementitious weigh hopper.

6.4.8 Locate the aggregate weight hopper.

6.4.9 Locate the cementitious sampling ports.

6.4.10 Review batching method.

6.4.11 Examine discharge boot.

6.4.12 Determine if scales zero prior to charging.

6.4.13 Determine if a moisture probe is present.

6.4.14 Determine where admixtures are introduced.

6.4.15 Determine the type of scales.

6.4.16 Determine method of addition and source of water.

6.4.17 Verify that the supplier has checked the blades for wear.

6.4.18 Locate the automatic timing device.

6.4.19 Locate the automatic discharge locking device.

6.4.20 Review cold weather concreting procedure if applicable.

6.4.21 Have the supplier certify the admixture metering and proportioning systems.

6.5 The aggregate, cementitious, and water scales will be checked in accordance with 507.02(b) and recorded in APPENDIX A.

6.5.1 Record the scale identification data.

6.5.2 Ensure that all weigh hoppers are clean and empty prior to calibration.

6.5.3 Apply the necessary calibration equipment; chains, platforms, and etc.

6.5.4 Tare the scales.

6.5.5 Load the first increment of mass.

6.5.6 Compare to the known mass for variance.

6.5.7 Repeat 6.5.5 and 6.5.6 in a cumulative manner throughout the working capacity of the scales, plus ten percent. Calibration will include a minimum of four points.

6.6 The meters will be checked in accordance with 507.02(b) and recorded in APPENDIX A.

6.6.1 Record the meter identification data.

6.6.2 Instruct plant operator to pump first increment of volume into a tared container.

6.6.3 Calculate the mass of the volume in the tared container.

6.6.4 Measure the mass of the volume in the tared.

6.6.5 Compare measured mass to the calculated mass of for variance.

6.6.6 Repeat 6.6.2 through and 6.6.5 in a cumulative manner throughout the working range of the meter, plus ten percent.

6.6.7 Calibration will include a minimum of three consecutive passing test results.

7.0 CRITICAL ELEMENTS.

7.1 The PCC plant will not be approved if the critical elements of plant operations are not met.

7.2 Cementitious Critical Elements

7.2.1 There is no system to prevent contamination within the silos or bins.

7.2.2 The conveying system does not prevent contamination.

7.3 Weigh hopper Critical Elements

7.3.1 The coarse and fine aggregate gates are not tight and are leaking.

7.3.2 The cementitious gates are not tight and are leaking.

7.3.3 There is no cementitious sampling port.

7.4 Batching Critical Elements

7.4.1 The scales do not zero prior to charging.

7.4.2 The water is not potable or documentation is not supplied indicating accordance with 913.01.

7.5 Mixing Critical Elements

7.5.1 The blades are not in accordance with manufacturer’s recommendations.

7.5.2 The mixer is not equipped with a timing device.

7.5.3 The mixer is not equipped with an automatic locking device.

7.6 Certification Critical Elements

7.6.1 The supplier cannot certify the admixture metering system.

7.6.2 The supplier cannot certify the accuracy of the proportioning system.

7.7 Scales and Meters Critical Elements

7.7.1 The difference between the scale reading and the actual mass applied is greater than on half percent.

7.7.2 The difference between the meter reading and the actual volume is greater than one percent.

8.0 REPORT

8.1 Report APPENDIX A.

8.2 Distributed as identified.

APPENDIX A

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APPENDIX A
PORTLAND CEMENT CONCRETE PLANT INSPECTION

PLANT OWNERS NAME	PLANT CAPACITY	PLANT NUMBER
OWNER'S HOME OFFICE ADDRESS	PLANT MANUFACTURER	MANUFACTURED DATE
PLANT LOCATION	TYPE OF PLANT CENTRAL SHRINK TRANSIT	MODEL NUMBER
PLANT AREA CODE AND PHONE NUMBER		INSPECTION DATE

AGGREGATE STORAGE

YES NO

BY STOCKPILING

IN BINS

ARE AGGREGATES KEPT FROM INTERMIXING

CORRECTIVE ACTIONS: _____

_____

_____

_____

AGGREGATE CONVEYING SYSTEM

BELT BUCKET ELEVATOR

OTHER

IF OTHER, EXPLAIN:

_____

_____

_____

_____

BINS/HOPPER

YES NO

ARE COARSE AND FINE AGGREGATE GATES TIGHT AND NON-LEAKING

ARE CEMENTITIOUS GATES TIGHT AND NON-LEAKING

ARE WEIGH HOPPER GATES TIGHT AND NON-LEAKING

IS THE CEMENTITIOUS WEIGHT HOPPER SEPARATE FROM THE AGGREGATE WEIGH HOPPER

IS THERE A CEMENT SAMPLING PORT IN THE SILO

IS THERE A CEMENT SAMPLING PORT IN THE WEIGH HOPPER

IS THERE A SYSTEM TO PREVENT OVERLOADS

CORRECTIVE ACTIONS: _____

_____

_____

_____

CEMENTITIOUS

YES NO

IS THERE A SYSTEM TO PREVENT CONTAMINATION WITHIN SILOS OR BINS

DOES THE CONVEYING SYSTEM PREVENT CONTAMINATION

CORRECTIVE ACTIONS: _____

_____

_____

_____

ADMIXTURES

YES NO

CONTROLLED BY VOLUME

CONTROLLED BY MASS

ADDED MANUALLY

ADDED AUTOMATICALLY

BATCHING

YES NO

IS BATCHING CONDUCTED MANUALLY

IS BATCHING CONDUCTED AUTOMATICALLY

IS DISCHARGE BOOT CLEAN AND FUNCTIONING

PROPERLY

EXCESSIVELY

DO SCALES ZERO PRIOR TO CHARGING

IS THERE A MOISTURE PROBE IN THE COARSE AGGREGATE

IS THERE A MOISTURE PROBE IN THE FINE AGGREGATE

WHERE AND WHEN IS ADMIXTURE INTRODUCED

_____

_____

_____

SCALES

DIAL LOAD CELL OTHER

IF OTHER, EXPLAIN: _____

_____

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APPENDIX A
PORTLAND CEMENT CONCRETE PLANT INSPECTION

BATCHING (CON'T)

IS WATER ADDED BY
VOLUME/METERED MASS

IS SOURCE OF WATER
COMMERCIAL OTHER

IF OTHER, EXPLAIN: _____

_____

_____

CORRECTIVE ACTIONS: _____

_____

_____

_____

MIXING

YES NO

HAS THE SUPPLIER CHECKED THE BLADES FOR WEAR IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS

DATE CHECKED _____

IS THE MIXER EQUIPPED WITH A TIMING DEVICE

IS THE MIXER EQUIPPED WITH AN AUTOMATIC DISCHARGE LOCKING DEVICE

CORRECTIVE ACTIONS:

_____

_____

_____

_____

COLD WEATHER PRODUCTION

YES NO

IS THE PLANT CAPABLE OF PRODUCING COLD WEATHER CONCRETE

IF YES

IS THERE A SYSTEM FOR MONITORING TEMPERATURE

CAN THE WATER BE HEATED

CAN THE AGGREGATES BE HEATED

STEAM DRY OTHER

CERTIFICATION

I CERTIFY THAT THE ADMIXTURE METERING SYSTEM IS ACCURATE AND MAINTAINED TO ONE PERCENT, IF BY VOLUME AND ONE HALF PERCENT, IF BY WEIGHT.

I ALSO CERTIFY THAT THE ACCURACY OF THE PROPORTIONING SYSTEM IS MAINTAINED IN ACCORDANCE WITH THE FOLLOWING:

ADMIXTURES ……..±3 PERCENT
AGGREGATES ….…….. ±2 PERCENT
CEMENTITIOUS MATERIALS……±1 PERCENT
WATER ……..…….. ±1 PERCENT

_____ _____ _____
SUPPLIER'S SIGNATURE TITLE DATE

REMARKS

_____

_____

_____

DEPARTMENT SIGNATURE	CLASSIFICATION	DATE SIGNED
THIS IS TO CERTIFY THAT I HAVE ACCOMPANIED THE DEPARTMENT ON THIS INSPECTION FOR THE ABOVE NAMED CONCRETE PLANT AND HAVE GIVEN ALL INFORMATION, TRUE AND COMPLETE, TO THE BEST OF MY KNOWLEDGE.	SUPPLIER'S SIGNATURE	DATE SIGNED

DISTRIBUTION:
MATERIALS AND TESTS DIVISION
DISTRICT MATERIALS AND TESTS ENGINEER
SUPPLIER

ITM 405 A
APPENDIX A
PORTLAND CEMENT CONCRETE PLANT INSPECTION

INSPECTION OF SCALES AND METERS FOR CONCRETE PLANT

PRODUCER _____ PLANT LOCATION _____
PLANT NO._____

Scales and meters will be checked to the maximum capacity for which they will be used. The allowable difference between the scale reading and the actual weight applied shall be one half percent or less. Meter variation shall also be one percent or less. Scales will be checked cumulatively throughout the working capacity plus approximately ten percent. At least three points within the working range for meters will be checked.

AGGREGATE SCALE CHECK
MAKE_____ SERIAL NO._____ CAPACITY_____

LOAD APPLIED							
SCALE READING							
ERROR, KG							
PERCENT ERROR							

CEMENT SCALE CHECK

MAKE _____ SERIAL NO._____ CAPACITY _____

LOAD APPLIED							
SCALE READING							
ERROR, KG							
PERCENT ERROR							

WATER SCALE CHECK

MAKE_____ SERIAL NO._____ CAPACITY_____

LITER							
MASS APPLIED							
SCALE READING							
ERROR, KG							
PERCENT ERROR							

REMARKS
_____
_____
_____
_____

PLANT NO____________________

WATER SCALE CHECK (CON'T)

____________________________________SCALE

LITER							
MASS APPLIED							
SCALE READING							
ERROR, KG							
PERCENT ERROR							

____________________________________SCALE

LITER							
MASS APPLIED							
SCALE READING							
ERROR, KG							
PERCENT ERROR							

____________________________________SCALE

LITER							
MASS APPLIED							
SCALE READING							
ERROR, KG							
PERCENT ERROR							

____________________________________SCALE

LITER							
MASS APPLIED							
SCALE READING							
ERROR, KG							
PERCENT ERROR							